Big Creek Hydroelectric System, Powerhouse 8 **HAER No.** CA-167-A
Operator Cottage (Building 105)
Big Creek
Big Creek Vicinity
Fresno County
California

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Western Region
Department of the Interior
San Francisco, California 94107

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HISTORIC AMERICAN ENGINEERING RECORD

Big Creek Hydroelectric System, Powerhouse 8, Operator Cottage (Building 105)
Big Creek
Big Creek Vicinity
Fresno County
California

HAER No. CA-167-A

Location: Near the confluence of Big Creek and the San Joaquin River in northwest 1/4 of Section 26, Township 8 South, Range 24 East, M.D.M, Fresno County, California (UTM Coordinates 11/293730/ 4120371), in the western Sierra Nevada Mountain Range approximately 4 miles west of the town of Big Creek, California, and approximately 45 air miles east of Fresno.

Date of Construction: 1921, remodeled in ca. 1937 and 1957.

Builder: Unknown

Present Owner: Southern California Edison Company
2244 Walnut Grove Avenue
Rosemead, CA 91770

Original Use: Operator Cottage

Present Use: Operator Cottage

Significance: Building 105, Powerhouse 8, is one of the few surviving examples of operator housing from the Big Creek System period of significance (1911-1929). Its significance derives from its contribution to an understanding of the historic character of the physical and social environment of the Powerhouse 8 compound. The Big Creek System is significant as a classic example of hydroelectric engineering and technology, for its association with John S. Eastwood, Henry E. Huntington, and George C. Ward, and its contribution to development of the Los Angeles metropolitan Area.

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Southern California Edison Company
Environmental Affairs Division
Rosemead, CA 91770

Date: April 20, 1995

I. DESCRIPTION

Building 105 is an operator's cottage constructed in July, 1921, one month prior to the completion of Powerhouse 8 in August of 1921. This single story house is on a lot that slopes south at the end of the street (Photo CA-167-A-1) that runs above Big Creek on the north side, approximately twelve hundred feet southeast from Powerhouse 8 (Photo CA-167-A-2). The Powerhouse 8 residential complex is one of four residential complexes associated with the Big Creek Project. The others are at the town of Big Creek, at Powerhouse 1, and at Powerhouses 2/2A and 3. Of these residential complexes, the one at Powerhouse 8 was the smallest. The largest is the town of Big Creek which serves as the Project headquarters. All of the residential complexes had clubhouses, bunkhouses, kitchens and other support buildings. The complexes at Big Creek and Powerhouse 3 also had schools. The Big Creek Project utilizes the watershed of the San Joaquin River within the western slopes of the Sierra Nevada Mountains for hydroelectric power generation. Power from the Project's eight powerhouses is transmitted via 240 miles of high voltage transmission lines to the Los Angeles market.

Two sizes of wood-frame, stud-wall construction "family" operators cottages were built at Powerhouse 8: four room and six room. All used concrete perimeter foundations, with wood posts and concrete footings. Some tent housing was also used in the early days of the operation of Powerhouse 8. Building 105 is one of the six room cottages, all of which were built using the same basic floor plan (SCE Drawings 39565, 30563, and 39564). The foundation, basement, and in a few cases placement of the doorways, were modified from structure to structure in response to the terrain. Building 105 differed by placement of the front entrance on the side elevation, and a stair catwalk running half the length of the rear side elevation (Photos CA-167-A-3 and CA-167-A-4). All the rooms and all other fenestration remain consistent with the standard plan.

Building 105 is a rectangular plan with a transverse gable roof covered with sheets of tin; exterior walls are covered with ca. 1957 pink asbestos shingles. One enters through a large screened porch on the west side elevation which wraps around the house to the end elevations (Photos CA-167-A-5, CA-167-A-6, and CA-167-A-7). Accordion doors separate the screened porch into segments on the west (front) side and south end elevations (Photos CA-167-A-8 and CA-167-A-9). Each segment is lighted by single fixtures mounted on the wood-plank porch ceiling. In addition to the front entrance, the screened porch can be entered from the back of the house through a 1/2 screened door on the side of the west end elevation (Photo CA-167-A-10).

The house is entered by way of the screened porch through double French doors to the dining room (Photo CA-167-A-10), the living room (Photo CA-167-A-8), bedroom #2 (Photo CA-167-A-11, and bedroom #3 (Photo CA-167-A-12), and through single French doors to

bedroom #1 (Photo CA-167-A-25) and the north end of the hall (Photo CA-167-A-31). All windows are original, and all are 1 light over 1 light with wood surrounds (Photo CA-167-A-13) except one four pane window into the utility room at the back of the house (Photo CA-167-A-4).

The 14 1/2 foot by 20 1/2 foot living room is the largest room in the house. The original plaster walls in this room were replaced with fiberboard about 1937 (Photo CA-167-A-14). Wiring for a single light fixture protrudes from the plaster ceiling. The living room floors are hardwood, as are the floors throughout the house except the bathroom and kitchen. A ceiling cornice and base molding with narrow molding boot trim the walls (Photo CA-167-A-15). Ceiling cornices and base moldings are found throughout the house except the bathroom. Window and door casings in this room and throughout the house are original.

The dining room is entered from the living room through a double-door archway (Photos CA-167-A-15 and CA-167-A-16); originally this doorway held double French doors. Along the east wall is a distinctive group of three 1 light over 1 light windows with common surround (Photo CA-167-A-17). The original plaster ceiling was replaced by acoustical tile probably during the 1957 remodeling. Wiring for a single light fixture protrudes from the ceiling.

The kitchen is entered from the dining room through a single door archway (Photo CA-167-A-18), though a five-paneled door from the south end of the hall (Photo CA-167-A-18), or through a five-paneled door from the utility room (Photo CA-167-A-19). The kitchen is notable for the distinctive built-in cabinetry around the sink (Photo CA-167-A-20), in the west corner (Photo CA-167-A-18), and adjacent to the door to the utility room (Photo CA-167-A-19). The floor of the kitchen and the adjacent utility room have a basket-weave pattern imitation brick linoleum covering. The ceiling is acoustical tile.

The large 8 foot by 5 1/2 foot utility room exits both to the kitchen (Photo CA-167-A-21), and to the outside through a 1/2 screen door to the top of the stairs/catwalk at the back of the house (Photo CA-167-A-4). The utility room contains two distinctive full-length built-in cabinets, one with a narrow five-panel entry door and the other with single panel Dutch doors (Photo CA-167-A-21). The ceiling is acoustical tile.

The recently remodeled bathroom is accessed from the hall through a five-paneled door (Photo CA-167-A-22). Of the original bathroom fixtures, only the mirrored and lighted medicine cabinet, and the entry door and surround remain (Photos CA-167-A-22 and CA-167-A-23). The original plaster walls and ceiling have been replaced with fiberboard, the shower stall has been removed, and the original bathtub replaced by a modern version and relocated to the opposite side of the toilet. The floor is covered by a modern composite linoleum tile.

The 10 foot 10 inch by 10 foot bedroom #1 is entered from the hall through a five-panel door (Photo CA-24 [5]), or from the screened porch through a single French door (Photo CA-167-A-25). Adjacent to the French door is a 1 light over 1 light window. A closet on the east wall is accessed by a five-panel door (Photo CA-167-A-24). Walls and ceiling are plaster; the floor is hardwood. A single ceiling fixture lights the room.

Bedroom #2 is located adjacent to bedroom #1, sharing a common closeted wall. This room also measures 10 foot 10 inches by 10 foot. It is entered from the hall through a five-paneled door (Photo CA-167-A-26), or through double French doors which open out to the screen porch (Photo CA-167-A-27). Entrance to the unusual windowed closet on the west wall is through a five-paneled door (Photo CA-167-A-27). A 1 light over 1 light window is located on the east wall (Photo CA-167-A-26). Walls and ceiling are plaster; the floor is hardwood. A single ceiling fixture lights the room (Photo CA-167-A-28).

Bedroom #3 measures 10 1/2 feet by 12 1/2 feet and occupies the east corner of the house. It is entered from the hall through a five-panel door, or from the screen porch through double French doors (Photo CA-167-A-29). This room has two 1 light over 1 light windows; one on the south wall (Photo CA-167-A-30) and one on the east wall (Photo CA-167-A-29). A windowed closet on the west wall is accessed through a five-paneled door (Photo CA-167-A-30). The walls are plaster. The ceiling is acoustical tile. The floors are hardwood. Wiring for a single light fixture protrudes through an opening in the ceiling (Photo CA-167-A-29).

The 23 foot long hall divides bedrooms #1 and #2 from the kitchen bathroom and bedroom #3. A four door built-in linen closet is located on the south side of the hall across from the entry door to bedroom #1 (Photo CA-167-A-24). At the east end, the hall exits to the screened porch through a single French door (Photo CA-167-A-31). A trapdoor access to the attic is located in the hall above the east end exit door (Photo CA-167-A-31).

II. HISTORICAL CONTEXT

The Building of the Big Creek Hydroelectric System is considered one of the world's most important engineering and technological achievements during the first third of the 20th Century (Hill 1993). Its construction was compared at the time with that of the Panama Canal as a major undertaking. It held many records including longest hard-rock tunnel, longest transmission lines, and highest head powerhouse (Myers 1983). Its enormous (for the time) generation capacity contributed significantly to the development of the Los Angeles metropolitan area. And it was associated with the lives of three significant historical figures:

- John S. Eastwood, one of the pioneer hydroelectric and dam engineers of California, the initial Big Creek Project was his vision and design;

- Henry E. Huntington, one of California's leading capitalists during the early decades of the 20th Century, was the key financier behind the Big Creek Project. His wealth, connections, and ambitions--both for this project and the development of the Los Angeles area--made possible the initial construction of the Project; and

- George C. Ward, manager of the complex engineering and construction operations during the great Big Creek Project expansion of the 1920s, became famous in engineering and construction circles because of his work on the Project.

The Big Creek area was first recognized as having potential for hydroelectric development by the engineer John S. Eastwood in the 1890s. Eastwood played an important role in the creation of the System not only by laying out the project, but also by inducing a notable Los Angeles businessman, Henry E. Huntington, to finance the project. Huntington was the nephew of Collis P. Huntington, one of the so-called Big Four who founded the Central Pacific (later Southern Pacific) Railroad which built the western half of the transcontinental railroad. Henry Huntington inherited his uncle's share of the multi-million dollar railroad business which he sold in 1901 for $50 million. Huntington increased the size of his fortune many times through his development of public utilities, real estate and various Los Angeles area interurban electric railways. A man of statewide significance, Huntington's business ventures, like his support for the Big Creek Project, led to Los Angeles becoming one of the most important cities in the United States in the early 20th Century (Frederick 1992).

Through the huge amounts of power produced by the Big Creek Project, Huntington hoped to consolidate under his control all the utilities in Southern California. He and several associates, including the Southern Pacific Railroad, W. F. Kerckhoff, and A. C. Balch, incorporated Pacific Light and Power Corporation (PL&P) in 1909 (Fowler 1923:540). As agreed years earlier, John S. Eastwood was compensated for his contribution to the Big Creek Project with 10% of PL&P stock. In 1910, Huntington consolidated his personal control over PL&P and eliminated most of his associates' interests, including Eastwood's, through a series of agreements and stock maneuvers.

In 1911, financing for the Big Creek Project was completed by a syndicate of New York bankers who made $10 million available (Shoup 1988:42). Construction on Powerhouses 1 and 2 began during the years 1911 to 1912. Work also started on building the dams to create Huntington Lake, and the various tunnels and penstocks to transport water from the lake to the powerhouses. In conjunction with this early project development, the town of Cascada (later renamed Big Creek) was started, and by December, 1911, bunk houses and a mess hall were

available for the construction workers (Shoup 1988:49). The first permanent housing in the Project, four residential cottages for top employees, was built in August, 1912, in Cascada. Powerhouse 1 was ready to deliver power on October 14, 1913, and Powerhouse 2 was ready the following December 18 (Shoup 1988:51-66).

By 1914, the community of Cascada, located near Powerhouse 1, had grown into a small town with a variety of commercial and residential structures (Shoup 1988:51). Apart from the permanent structures in Cascada, most of the worker residences and associated structures in other parts of the Project were only impermanent structures such as tents and crudely built cabins. During the war years (1914-1918), construction slowed considerably at Big Creek due to the scarcity of capital and the drop in demand for power in Los Angeles. In 1916, Huntington exchanged his stock in Pacific Light and Power for Southern California Edison stock, and he retired from daily management of the business.

In 1919, following the end of World War 1, a new period of expansion began at Big Creek initiated by Southern California Edison. The boom period of the 1920s in Los Angeles created an increasing demand for electrical power which Big Creek could fill. During the next decade, the bulk of construction was completed that created the Big Creek System as it exists today.

From 1920 to 1923, Powerhouse 1 and 2 were expanded by adding third units, and two new powerhouses were built, including Powerhouse 8, the so-called "90-day Wonder." A vast new construction effort was also undertaken to augment the water supply to the new and expanded plants. Work on Powerhouse 2 was completed late in 1920. Work on Powerhouse 8 began in December, 1920, after an access road, a railroad, and a camp site for 300 men had been completed. Excavation for the powerhouse site was completed by May, 1921 and the concrete structure was completed and ready for operation on August 10, 1921, thus bringing the facility on line a mere 90 days following initiation of construction.

Each powerhouse had 3 to 5 operators working an 8-hour shift, with 9 to 15 operators living at each facility (Landers 1988:182). In addition to the operators, each powerhouse had one station chief and an assistant station chief, who were always on call in the event of an emergency (Landers 1988:183). All the station chiefs reported to the superintendent of operations in Big Creek (Waite 1988:11). The powerhouse crew also included a variety of maintenance people, including oilers and floormen working under the machinists or electricians, who were responsible for keeping the powerhouses clean and the mechanical systems operating properly (Waite 1988:1, 9). Keeping a powerhouse operating during the 1920s was much more labor-intensive than today. Then all the controls were operated manually and the equipment was less reliable, thus demanding constant attention to prevent and repair breakdowns.

The employees working at each powerhouse began to form their own permanent and stable communities in the early 1920s (Shoup 1988:145). The center of social life of these communities was the clubhouse, know as the "Edison Club," where birthday parties, dances, card games and other types of social gatherings were held. Given the isolation of these communities due to limited access and severe weather, and the lack of other recreation activities (even radio reception was very poor), the clubhouse was the focus of everyone's free time. Since there were no churches at the powerhouse communities, the clubhouses were also used as Sunday schools for the children (Haire 1988:123).

At the same time that Powerhouse 8 was being constructed, housing for the facility's operators, such as building #105 (completed in July of 1921), were also under construction. Housing was initially provided for free to the powerhouse employees. Eventually, however, a nominal rent of $25 a month was charged. There was not enough housing to accommodate all the facility employees, and priority was given to the operators because "it was necessary for them to be at the plant all the time during those days" (Waite 1988:10). The employees who were not operators or supervisors lived in private houses in Big Creek until their seniority qualified them for an Edison house (Haire 1988:298). In 1924, as a result of increasing demand for housing, SCE initiated plans to build 24 new structures at the Big Creek powerhouses (Shoup 1988:155). The houses were for only married people (all the operators were usually married), while single men lived in dormitories and ate at a cookhouse (McCullum 1988:12). Many of the utility and maintenance people lived in the town of Big Creek rather than at the powerhouse, since they did not have to be constantly on duty like the operators.

During the period following 1930, the population growth and level of activity at Big Creek decreased considerably. First, construction came to a virtual standstill during the 1930s Great Depression as capital and new demand for electricity dwindled. The Great Depression was followed by World War II when many employees at Big Creek were drafted for service in the armed forces. Big Creek did not enter a new period of expansion until 1947 when growth in population and economic activity in Southern California substantially increased the demand for electricity (Shoup 1988:175).

III. SOURCES

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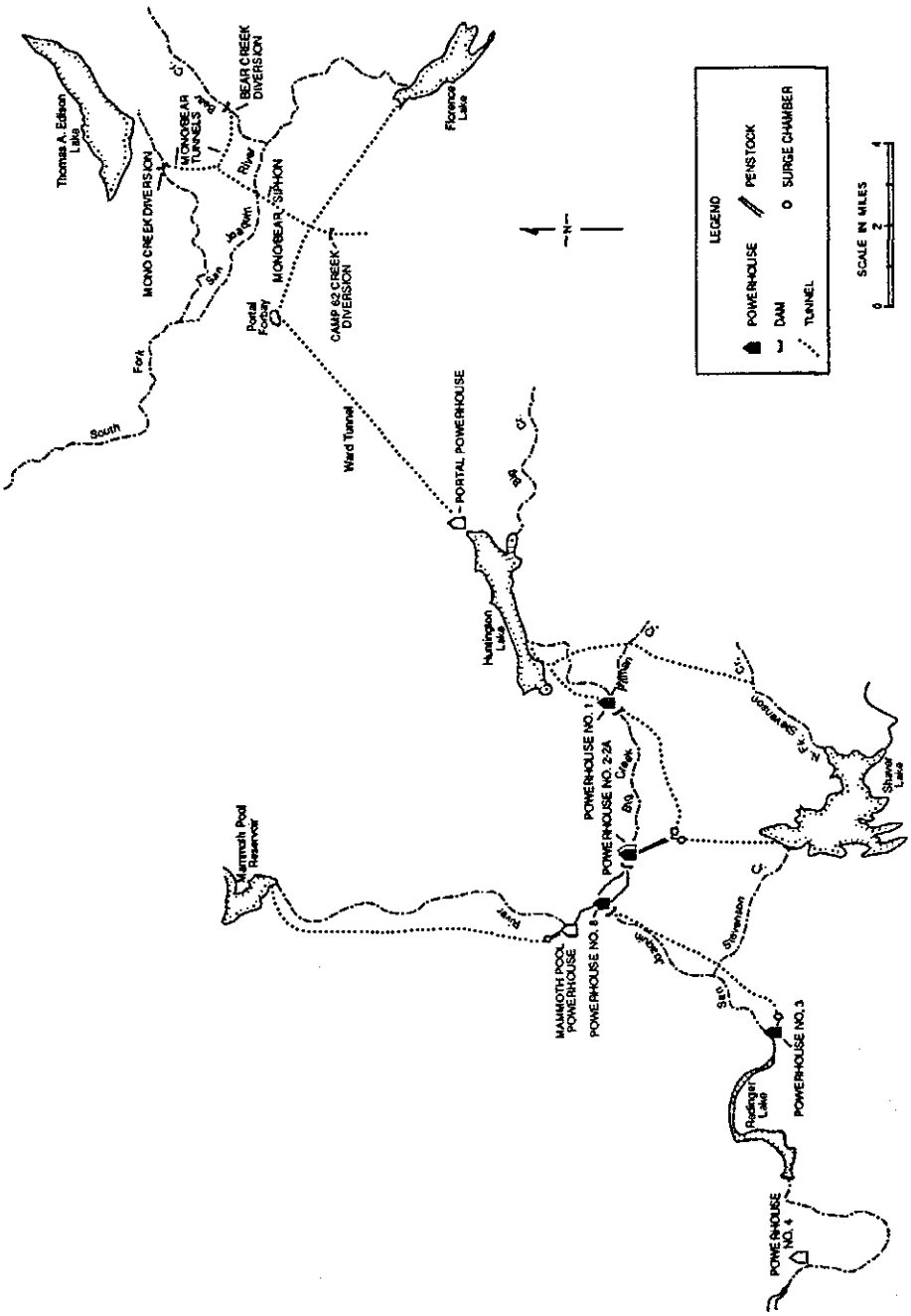
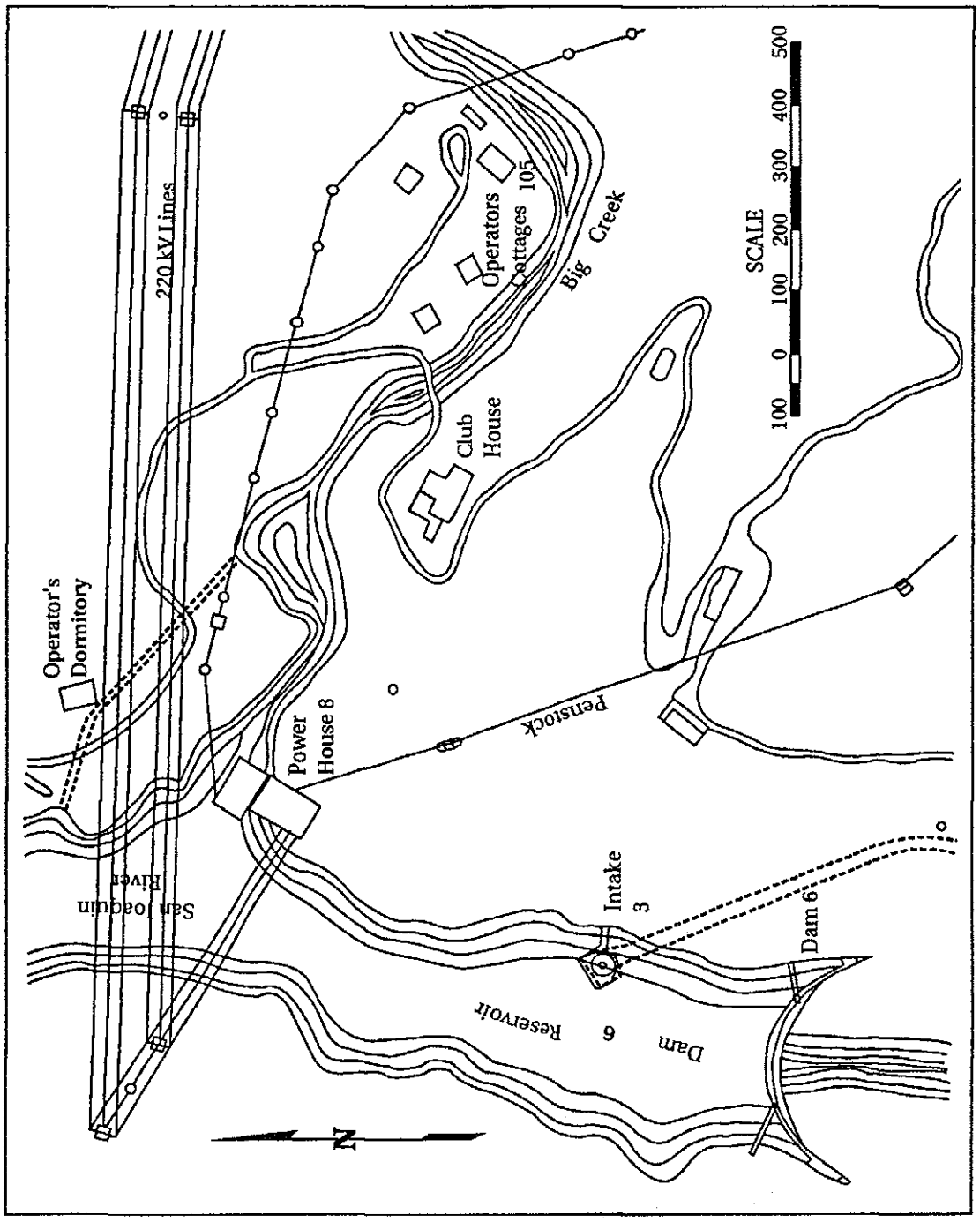
IV. PROJECT INFORMATION

This Historic American Engineering Record documentation of Big Creek Hydroelectric System Powerhouse 8, Building #105, was undertaken because the building represents excess housing. SCE has automated the Big Creek powerhouses, thus making it unnecessary to have on-site crews. As a result the former residential communities, including operator cottages like this house, have become obsolete.

Big Creek Hydroelectric System, Powerhouse 8,
Operator Cottage (Building 105)
HAER No. CA-167-A (Page 10)



Big Creek Hydroelectric System, Powerhouse 8,
Operator Cottage (Building 105)
HAER No. CA-167-A (Page 11)



Big Creek Hydroelectric System, Powerhouse 8
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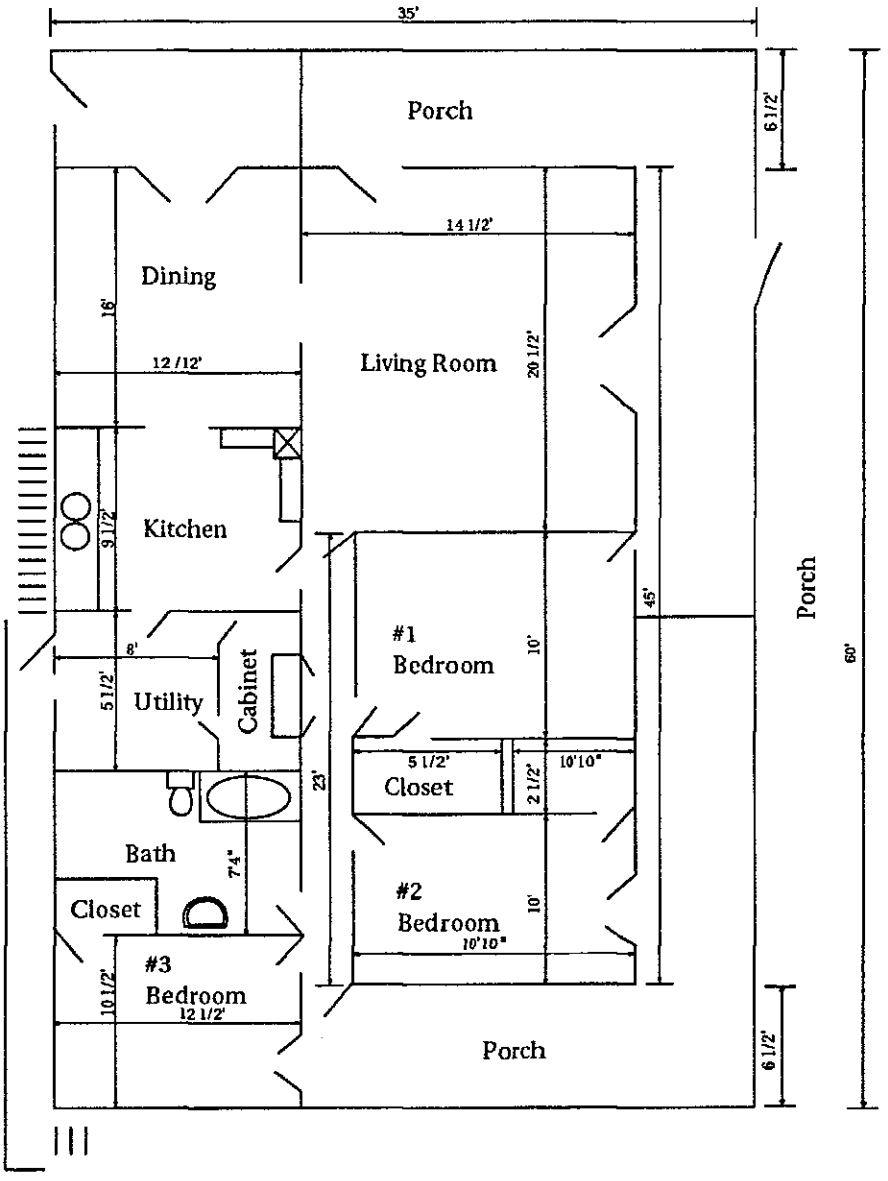
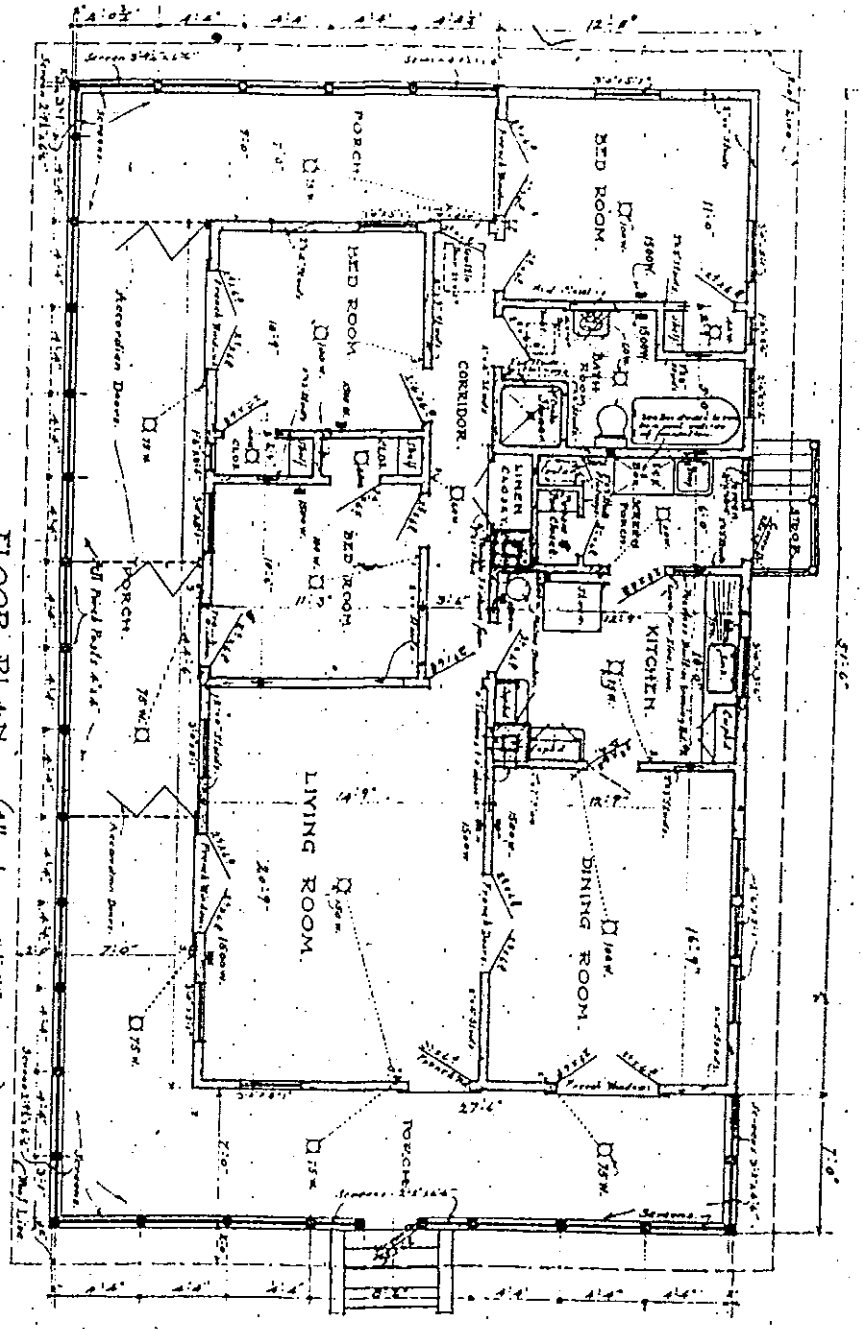
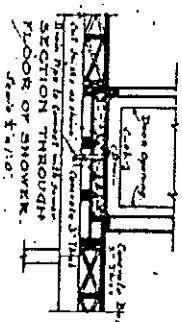
HAER No. CA-167-A (Page 12)



Big Creek Hydroelectric System, Powerhouse 8
Operator Cottage (Building 105)
HAER No. CA-167-A (Page 13)



FLOOR PLAN.



SECTION THROUGH FLOOR OF SHOWER.

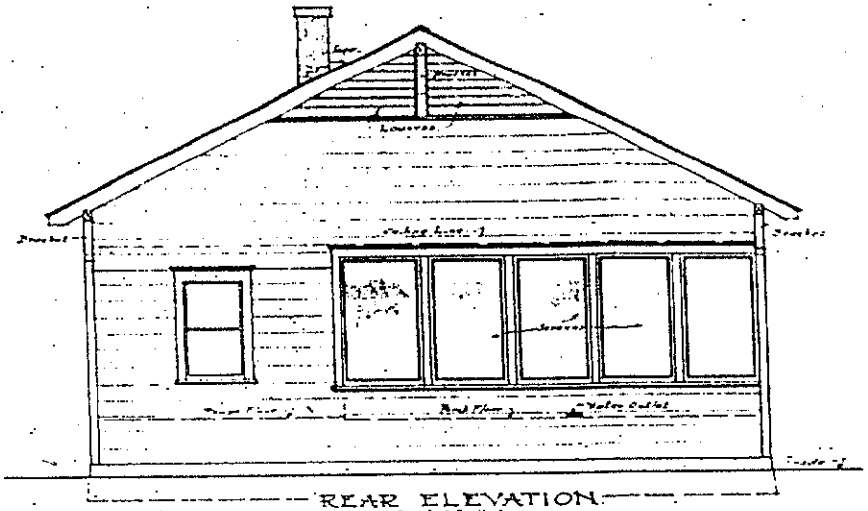
SOUTHERN CALIFORNIA EDISON CO.
LOCATION BIG CREEK NO 8.
FLOOR PLAN OF 3 ROOM OPERATOR'S COTTAGE.

22648-448

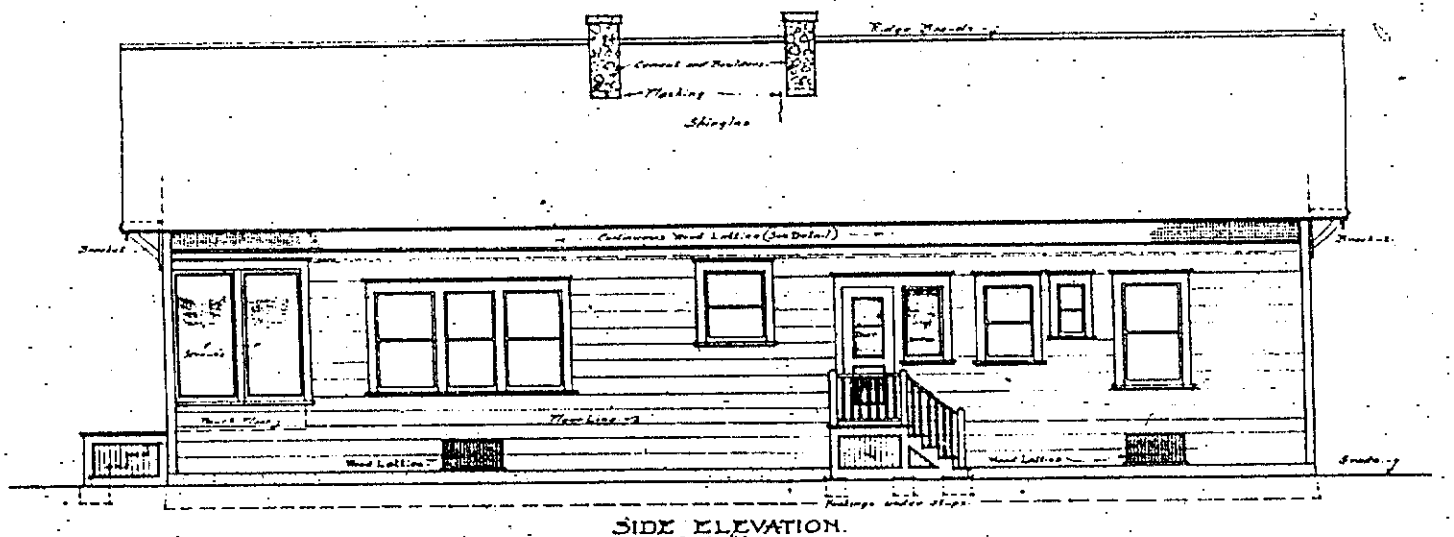
39563

22648-448

Big Creek Hydroelectric System, Powerhouse 8
Operator Cottage (Building 105)
HAER No. CA-167-A (Page 14)



REAR ELEVATION



SIDE ELEVATION.

BOBO2

SOUTHERN CALIFORNIA EDISON CO

LOCATION BIG CREEK No 8.

REAR AND S-DR ELEVATIONS OF 5th ROOM OPERATOR'S COTTAGE.

13634 Sheet of F.S. Details.
13511 Typical Details.

13637	Cupboard Details.	Drawn	W.J.T.
13649	Front and Side Elevations.	Traced	B.J.T.
13648	Floor Plan and Details.	Checked	[illegible]
13650	Foundation Plan.	Scale	3/4"=1'-0"
		Date	June 15, 1911

APPROVED

REVISIONS

CROSS REFERENCES